

## CLAIMS

- 1    1.    A method for controlling the voltage on a lens of an electron emitting device,  
2    the method comprising the steps of:  
3            supplying an emitter voltage to an electron emitter in the electron  
4            emitting device, wherein a current amplitude is established;  
5            sensing the emitter voltage on the electron emitter;  
6            supplying a non-inverted input voltage to an amplifier that follows the  
7            emitter voltage; and  
8            providing an amplifier output voltage from the amplifier to the lens,  
9            wherein the amplifier output voltage corresponds to the emitter voltage at the  
10          electron emitter.
  
- 1    2.    The method of claim 1, further comprising the step of:  
2            driving other lenses in the emitting device based on the amplifier  
3            output voltage supplied by the amplifier.
  
- 1    3.    The method of claim 1, further comprising the step of:  
2            adjusting the amplifier output voltage so that the lens optimizes the  
3            focal point of a beam emitted from the electron emitter.
  
- 1    4.    The method of claim 3, wherein the amplifier output voltage is adjusted by  
2            varying the gain of the amplifier.

1 5. The method of claim 4, wherein the gain is varied by a variable resistor  
2 coupled to the amplifier.

1 6. The method of claim 1, wherein said sensing step is performed by a sensing  
2 diode.

1 7. The method of claim 1, wherein said sensing step is performed by an  
2 electronic switch.

1 8. The method of claim 1, wherein said sensing step is performed by one or more  
2 high-breakdown voltage MOS transistors.

1 9. The method of claim 1, wherein said amplifier is a non-inverting summer  
2 circuit that sums the emitter voltage and a desired lens voltage.

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- 1 10. A storage device comprising:  
 2 an electron emitter;  
 3 a lens to adjust the focal point of a beam emitted from the electron  
 4 emitter;  
 5 a sensing switch coupled to the electron emitter to sense voltage on the  
 6 electron emitter;  
 7 an amplifier coupled to the sensing switch that follows the voltage on  
 8 the electron emitter, wherein the sensing switch is coupled to an input of the  
 9 amplifier and the output of the amplifier is coupled to the lens; and  
 10 wherein the output of the amplifier drives the voltage on the lens.
- 1 11. The storage device of claim 10, further comprising:  
 2 a variable resistor coupled to an input of the amplifier, wherein the  
 3 gain of the amplifier is adjusted according to the variable resistor.
- 1 12. The storage device of claim 10, wherein the sensing switch is a sensing diode.
- 1 13. The storage device of claim 12, further comprising:  
 2 a plurality of additional sensing diodes coupled to the input of the  
 3 amplifier and other electron emitters.

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1        14.    The storage device of claim 12, further comprising:  
 2                a compensating diode coupled to the sensing diode and the amplifier,  
 3        wherein the compensating diode compensates for a voltage drop across the  
 4        sensing diode; and  
 5                a bias resistor coupled to the amplifier side of the compensating diode  
 6        and ground.

1        15.    The storage device of claim 10, further comprising:  
 2                an emitter current control switch; and  
 3                a current control circuit coupled to the sensing switch, emitter current  
 4        control switch, and the variable resistor, wherein the current control circuit  
 5        establishes the current amplitude supplied to the electron emitter.

1        16.    An electron emitting storage device, comprising:  
 2                emitter means for emitting electrons toward a storage medium;  
 3                lens means for focusing emitted electrons from the emitter means into  
 4        an optimized focal point on the storage medium;  
 5                means for sensing voltage applied to the emitter means;  
 6                amplifier means for providing an output voltage to the lens means that  
 7        is relative to the voltage applied to the emitter means; and  
 8                means for adjusting input voltage to the amplifier means so that the  
 9        output voltage to the lens means changes.

- 1    17.    The electron emitting storage device of claim 16, further comprising:  
2            means for controlling the current in the emitter means; and  
3            switching means for activating the emitter means.
  
- 1    18.    The electron emitting storage device of claim 16, wherein the amplifier means  
2    is in a non-inverting configuration.
  
- 1    19.    A method for controlling the voltage on a lens of an electron emitting device,  
2    the method comprising the steps of:  
3            supplying an emitter voltage to an electron emitter in the electron  
4            emitting device;  
5            sensing the emitter voltage on the electron emitter;  
6            summing the sensed emitter voltage and a desired lens voltage; and  
7            providing a voltage output that is the sum of the emitter voltage and the  
8            desired lens voltage to the lens of the electron emitting device.
  
- 1    20.    The method of claim 19, further comprising the step of:  
2            driving other lenses in the emitting device based on the provided  
3            voltage output.